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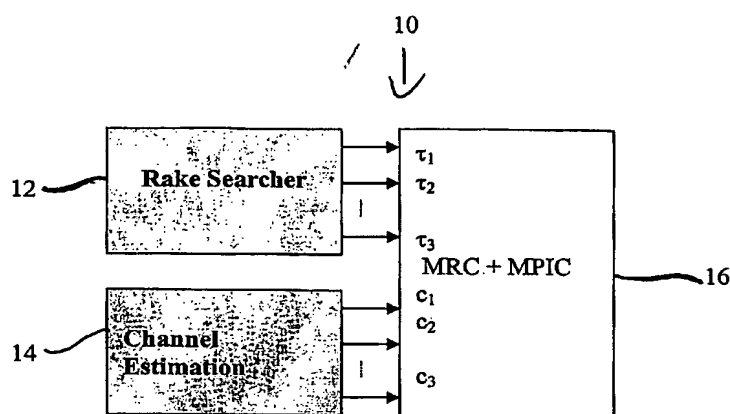
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(54) Title: **RAKE RECEIVER WITH MULTI-PATH INTERFERENCE ACCOMMODATION**



$$\hat{\tau}_l \text{ (a)} \quad \hat{c}_l \text{ (b)} \quad \mathbf{R}_f(\tau_l - \hat{\tau}_0) \text{ (c)} \quad \mathbf{R}_f^{-1}(\tau_k - \hat{\tau}_0) \text{ (d)} \quad \Lambda_{ss}^H(\hat{\tau}_k) \text{ (e)} \quad \vec{n}(\tau) \text{ (f)}$$

$$\psi(\tau) \mathbf{R}_f^{-1}(\tau_k - \hat{\tau}_0) \Lambda_{ss}^H(\hat{\tau}_k) = \sum_{l=0}^{N_p-1} c_l(\tau_l) x(\tau_l) \Lambda_{ss}(\tau_l) \mathbf{R}_f(\tau_l - \hat{\tau}_0) \mathbf{R}_f^{-1}(\tau_k - \hat{\tau}_0) \Lambda_{ss}^H(\hat{\tau}_k) + \vec{n}(\tau) \quad (I)$$

(57) **Abstract:** A method of extracting data from a received signal including multi-path interference in a rake receiver. The method includes sampling and filtering the received signal; estimating a time delay (a) between paths for the filtered samples  $\psi(\tau)$ ; and estimating channel complex coefficient (b) for the filtered samples  $\psi(\tau)$ . Transmitted data  $x(\tau_l)$  is extracted from the filtered samples  $\psi(\tau)$  for each path  $l$  by solutions of simultaneous equations of the following filtered samples  $\psi(\tau)$  equation (Formula I) wherein  $k$  is a particular path,  $N_p$  is the number of visible paths, (c) is a double convolution matrix of the filtering process and (d) is the pseudo inverse,  $\Lambda_{ss}(\tau_l)$  is the product of spreading and scrambling matrices and (e) is the inverse, and (f) is noise.